

Appl. No 10/828,699
Amdt. dated September 11, 2006
Reply to Office Action of June 9, 2006

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (currently amended) A medical device, comprising:
an elongate shaft having a proximal end, a distal end, a first lumen extending therethrough, and a second lumen extending therethrough;
a balloon coupled to the shaft, the balloon having a first inflated configuration and a second non-inflated configuration, wherein the balloon has a plurality of wings formed therein when in the second configuration; and
one or more cutting members coupled to the balloon,
wherein the one or more cutting members each include a traction region that is configured to improve traction between the balloon and a target site.
2. (original) The medical device of claim 1, wherein the traction region is defined by a plurality of saw-tooth projections extending from the cutting members.
3. (original) The medical device of claim 1, wherein the traction region is defined by a series of undulations in the cutting members.
4. (original) The medical device of claim 3, wherein the undulations curve from side-to-side.
5. (original) The medical device of claim 3, wherein the undulations curve up and down.
6. (original) The medical device of claim 1, wherein the traction region is defined by a plurality of bumps disposed on the cutting members.

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7. (original) The medical device of claim 1, wherein the traction region is defined by a helical region of the cutting members.

8. (original) The medical device of claim 1, wherein the traction region is defined by a saddle-shaped region of the cutting members.

9. (currently amended) A medical device, comprising:
an elongate shaft having a proximal end, a distal end, a first lumen extending therethrough, and a second lumen extending therethrough;
a balloon coupled to the shaft;
one or more cutting members coupled to the balloon,
wherein the one or more cutting members each include a traction region that is configured to improve traction between the balloon and a target site; and

~~The medical device of claim 1,~~ wherein the cutting members each include a proximally-extending connector wire and a distally-extending connector wire that are both attached to the shaft.

10. (original) The medical device of claim 9, wherein the proximally-extending connector wire and the distally-extending connector wire are connected to the shaft at opposing sides of the balloon.

11. (original) The medical device of claim 10, wherein the cutting members are not directly attached to the balloon.

12. (currently amended) A cutting balloon catheter, comprising:
an elongate catheter shaft;
a balloon coupled to the shaft, the balloon having a first inflated configuration and a second non-inflated configuration, wherein the balloon has a plurality of wings formed therein when in the second configuration; and

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a cutting blade coupled to the balloon, the cutting blade including means for cutting and means for gripping thereon.

13. (original) The catheter of claim 12, wherein the means for cutting and means for gripping are defined by a plurality of saw-tooth projections on the cutting blade.

14. (original) The catheter of claim 12, wherein the means for cutting and means for gripping are defined by a series of undulations on the cutting blade.

15. (original) The catheter of claim 14, wherein the undulations curve from side-to-side.

16. (original) The catheter of claim 14, wherein the undulations curve up and down.

17. (original) The catheter of claim 12, wherein the means for cutting and means for gripping are defined by a plurality of bumps disposed on the cutting blade.

18. (original) The catheter of claim 12, wherein the means for cutting and means for gripping are defined by a helical twist defined in the cutting blade.

19. (original) The catheter of claim 12, wherein the means for cutting and means for gripping are defined by a saddle-shaped region of the cutting blade.

20. (currently amended) A cutting balloon catheter, comprising:
an elongate catheter shaft;
a balloon coupled to the shaft;
a cutting blade coupled to the balloon, the cutting blade including means for cutting and
means for gripping thereon; and

~~The catheter of claim 12,~~ wherein the cutting blade includes a proximally-extending connector wire and a distally-extending connector wire that are both attached to the catheter shaft.

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21. (original) The catheter of claim 20, wherein the proximally-extending connector wire and the distally-extending connector wire are connected to the catheter shaft on opposing sides of the balloon.

22. (original) The catheter of claim 20, wherein the cutting blades are not directly attached to the balloon.

23. (currently amended) A cutting balloon catheter, comprising:

an elongate catheter shaft;

a balloon coupled to the shaft, the balloon having a first inflated configuration and a second non-inflated configuration, wherein the balloon has a plurality of wings formed therein when in the second configuration; and

a cutting blade coupled to the balloon, the cutting blade including an uneven traction surface that is configured to improve the traction between the balloon and a target site.

24. (currently amended) A medical device for expanding an intravascular lesion, comprising:

an elongate shaft having a proximal end, a distal end, a first lumen extending therethrough, and a second lumen extending therethrough;

a balloon coupled to the shaft, the balloon having a first inflated configuration and a second non-inflated configuration, wherein the balloon has a plurality of wings formed therein when in the second configuration;

one or more cutting members coupled to the balloon; and

means for improving traction between the balloon and the intravascular lesion.

25. (withdrawn) A method for treating an intravascular lesion, comprising the steps of:

providing a balloon catheter, the balloon catheter including a catheter shaft, a balloon coupled to the shaft, and a cutting blade coupled to the balloon, the cutting blade including a traction surface that is configured to improve the traction between the balloon and a target site;

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advancing the balloon catheter through a blood vessel to a position adjacent a target site;
and

inflating the balloon, whereby the traction surface engages the target site and improves the traction between the balloon and the target site.